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### PROGNOSTIC SIGNIFICANCE OF THE TOTALITY OF CLINICAL, LABORATORY, AND BIOCHEMICAL FACTORS AFFECTING THE SURVIVAL OF PATIENTS RECEIVING PROGRAMMED HEMODIALYSIS

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#### Abstract

The aim of this study was to perform a comprehensive assessment of the prognostic significance of combined clinical, laboratory, and biochemical factors affecting survival in patients undergoing maintenance hemodialysis. Despite advances in renal replacement therapy, mortality among hemodialysis patients remains unacceptably high, largely due to cardiovascular complications and metabolic disturbances [1,2]. To determine the sensitivity, specificity, and diagnostic performance of an integrated prognostic model, a multivariate receiver operating characteristic (ROC) analysis was performed, which is considered a standard approach for evaluating predictive accuracy in nephrology research [3,4].

**Keywords:** hemodialysis, survival, ROC analysis, sensitivity, specificity, AUC, prognosis, risk factors.

#### Objective

To evaluate the prognostic significance of combined factors influencing survival in maintenance hemodialysis patients by assessing sensitivity, specificity, and diagnostic accuracy using ROC analysis.



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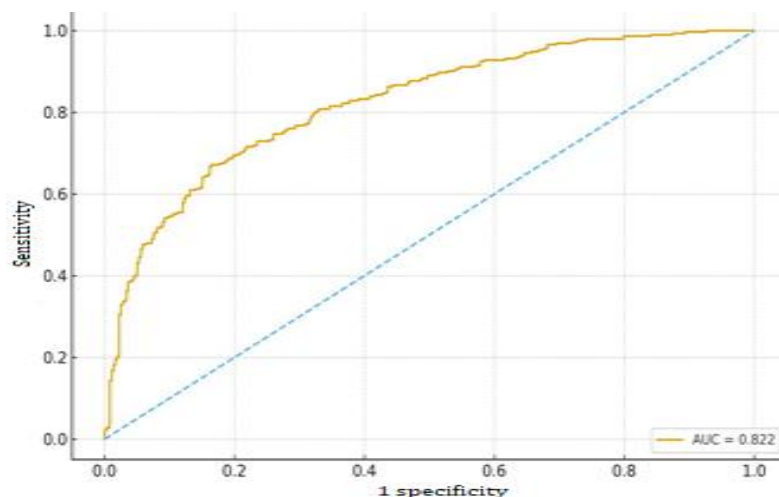
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### Materials and Methods

The study included patients with end-stage chronic kidney disease receiving maintenance hemodialysis. Clinical, laboratory, and biochemical parameters reflecting cardiovascular status, renal function, and mineral metabolism were analyzed. A multivariate ROC analysis was conducted to assess the overall prognostic contribution of the studied factors to patient survival, with calculation of the area under the curve (AUC), sensitivity, and specificity. Statistical significance was defined as  $p < 0.05$ .

### Results

Multivariate ROC analysis demonstrated that the combined set of studied parameters showed high predictive performance for survival in patients undergoing hemodialysis. The area under the ROC curve was  $AUC = 0.880$ , indicating excellent discrimination with high sensitivity and specificity. The results were statistically significant ( $p < 0.001$ ), confirming the robustness of the model in predicting adverse outcomes and reduced life expectancy.





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### Conclusions

1. The combined clinical, laboratory, and biochemical factors have high prognostic value for survival in maintenance hemodialysis patients.
2. The multivariate ROC model demonstrated excellent diagnostic performance with an AUC of 0.880.
3. The application of a multivariate approach may improve survival prediction, facilitate risk stratification, and support optimization of clinical management in hemodialysis patients.

### References

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